

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) ~~Process~~ A process for ~~stripping removing~~ residual volatile compounds contained in a thermoplastic polymer, ~~characterized in that it comprises~~ comprising the following steps:

- (1) forming ~~[[the]]~~ a thermoplastic polymer containing residual volatile compounds in the form of a melt flowing as a main stream;
- (2) forming a foaming agent in the form of one or more secondary liquid streams;
- (3) adding the one or more secondary liquid ~~stream(s)~~ streams to the main stream by spraying so as to divide each secondary liquid stream into several fractional streams and ~~thus to form a polymer melt/foaming agent pre-mixture;~~
- (4) introducing the pre-mixture into a static mixer, then into an expansion chamber at reduced pressure so as to separate the polymer melt from the residual volatile compounds and from the foaming agent; and
- (5) withdrawing the polymer melt, ~~thus stripped of~~ separated from the residual volatile compounds and ~~[[of]]~~ the foaming agent, from the expansion chamber.

2. (Currently Amended) ~~Process~~ The process according to Claim claim 1, ~~characterized in that wherein~~ the thermoplastic polymer is chosen from olefin polymers and aromatic vinyl polymers, ~~preferably from styrene (co-)polymers.~~

3. (Currently Amended) ~~Process~~ The process according to Claim claim 1 or 2, ~~characterized in that wherein~~ the foaming agent is chosen from water,

alcohols, especially C₄ to C₁₀ alcohols, ketones, especially C₃ to C₁₀ ketones, an aqueous carbon dioxide solution, and mixtures of two or more of these ~~products~~ agents.

4. (Currently Amended) ~~Process~~ The process according to ~~any one of~~ Claims claim 1 ~~[[to 3]]~~, characterized in that wherein each secondary liquid stream is divided, by spraying, into at least two, ~~preferably into at least three, especially into at least four,~~ fractional streams.

5. (Currently Amended) ~~Process~~ The process according to ~~any one of~~ Claims claim 1 ~~[[to 4]]~~, characterized in that ~~the~~ wherein each fractional ~~streams are~~ stream is oriented in a direction making a right, acute or zero angle, ~~preferably an acute or zero angle,~~ with respect to the direction of the main stream.

6. (Currently Amended) ~~Process~~ The process according to ~~any one of~~ Claims claim 1 ~~[[to 5]]~~, characterized in that wherein at least one of the fractional ~~streams~~ stream is oriented in a direction substantially equivalent to the direction of the main stream ~~or substantially in this direction~~, while at least one of the other fractional ~~streams~~ stream is oriented in a direction making an angle of greater than 20° and less than or equal to 90°, ~~preferably an angle of greater than 20° and less than 90°, especially an angle ranging from 30° to 80°, with~~ to the direction of the ~~[[said]]~~ main stream.

7. (Currently Amended) ~~Process~~ The process according to ~~any one of~~ Claims claim 1 ~~[[to 6]]~~, characterized in that wherein each secondary liquid ~~streams(s)~~ is(are) stream is added to the main stream at the moment when the ~~latter~~ main stream is subjected to a constriction that ~~particularly~~ comprises, in succession in the direction of flow of the main stream, a decompression phase followed by a compression phase.

8. (Currently Amended) ~~Process~~ The process according to ~~Claim~~ claim 7, ~~characterized in that the~~ wherein each secondary liquid ~~stream(s) is(are)~~ stream is added to the main stream between the decompression phase and the compression ~~phases, or preferably during the compression phase.~~

9. (Currently Amended) ~~Apparatus~~ An apparatus for removing residual volatile compounds contained in a thermoplastic polymer, ~~characterized in that it~~ comprises comprising:

[[-]] a thermoplastic polymer melt feed line;

[[-]] an addition chamber into which the feed line runs and through which ~~[[the]]~~ a thermoplastic polymer melt containing residual volatile compounds flows as a main stream;

[[-]] one or more ~~line(s)~~ lines for the addition of a foaming agent flowing as one or more secondary liquid streams, which ~~line(s) runs (run)~~ lines run into the addition chamber and ~~has (have)~~ have at its ~~(their) end(s)~~ their ends a spray device allowing each secondary liquid stream to be divided into several fractional streams;

[[-]] a static mixer having an inlet, connected to the addition chamber, and an outlet; and

[[-]] an expansion chamber for separating the polymer melt from the residual volatile compounds and from the foaming agent, which chamber is connected to the outlet of the static mixer and is provided with a line for withdrawing the polymer melt thus separated and with a line for extracting the residual volatile compounds and the foaming agent.

10. (Currently Amended) Apparatus The apparatus according to Claim claim 9, ~~characterized in that wherein~~ the spray device ~~consists of~~ includes a closed nozzle placed on the end of the addition line and pierced by several orifices, the number of which is equivalent to the number of fractional streams to be formed by the spray device.

11. (Currently Amended) Apparatus The apparatus according to Claim claim 10, ~~characterized in that wherein~~ the number of orifices per nozzle is at least 2, ~~preferably at least 3, especially at least 4.~~

12. (Currently Amended) Apparatus The apparatus according to Claim claim 10 or 11, ~~characterized in that wherein~~ the orifices are oriented in such a way that the resulting fractional streams are directed along a direction making a right, acute or zero angle, ~~preferably an acute or zero angle~~, with respect to the direction of the main stream flowing through the addition chamber.

13. (Currently Amended) Apparatus The apparatus according to Claim claim 10 to 12, ~~characterized in that wherein~~ at least one of the orifices is directed in such a way that the resulting fractional stream is oriented in a direction substantially equivalent to the direction of the mainstream flowing through the addition chamber ~~or substantially in this direction~~, while at least one of the other ~~orifices~~ orifice is directed in such a way that the resulting fractional stream is oriented in a direction making an angle of greater than 20° and less than or equal to 90°, ~~preferably an angle of greater than 20° and less than 90°, especially an angle ranging from 30° to 80°, with~~ to the direction of the ~~the~~ [[said]] main stream.

14. (Currently Amended) ~~Apparatus~~ The apparatus according to ~~any one of Claims claim 9 [[to 13]]~~, characterized in that wherein the addition chamber comprises a constriction zone having ~~especially~~, in the direction of flow of the main stream, in succession an upstream or convergent section and a downstream or divergent section, the narrowest part of the constriction zone being located between the two sections.

15. (Currently Amended) ~~Apparatus~~ The apparatus according to ~~Claim claim 14, characterized in that the~~ wherein ~~constriction the spray~~ device is placed in the narrowest part of the constriction zone ~~or preferably in the downstream or divergent section of the said zone.~~

16. (Currently Amended) ~~Apparatus~~ The apparatus according to ~~any one of Claims claim 9 [[to 15]]~~, characterized in that wherein the addition chamber is contiguous with the inlet of the static mixer.

17. (New) The process of claim 2, wherein the thermoplastic polymer is a styrene (co-)polymer.

18. (New) The process of claim 3, wherein the alcohols are C₁ to C₁₀ alcohols and the ketones are C₃ to C₁₀ ketones.

19. (New) The process of claim 4, wherein each secondary liquid stream is divided into at least three fractional streams.

20. (New) The process of claim 19, wherein each secondary liquid stream is divided into at least four fractional streams.

21. (New) The process of claim 5, wherein each fractional stream is oriented in a direction making an acute or zero angle with respect to the direction of the main stream.

22. (New) The process of claim 6, wherein the angle is greater than 20° and less than 90°.

23. (New) The process of claim 22, wherein the angle is from 30° to 80°.

24. (New) The process of claim 7, wherein each secondary liquid stream is added to the main stream while the main stream is in the compression phase.

25. (New) The apparatus of claim 11, wherein the number of orifices per nozzle is at least 3.

26. (New) The apparatus of claim 25, wherein the number of orifices per nozzle is at least 4.

27. (New) The apparatus of claim 12, wherein the orifices are oriented in a direction making an acute or zero angle with respect to the direction of the main stream flowing through the addition chamber.

28. (New) The apparatus of claim 13, wherein the angle is greater than 20° and less than 90°.

29. (New) The apparatus of claim 28, wherein the angle is from 30° to 80°.

30. (New) The apparatus of claim 14, wherein the spray device is placed in the downstream or divergent section of the constriction zone.